IN THE CLAIMS

Please amend claims 1, 10 and 11, and add new claims 17-24 as follows:

1. (CURRENTLY AMENDED) A method for forming a nitride semiconductor device, comprising:

(a) growing one or more non-polar a-plane gallium nitride (GaN) template layers on [[an r-plane]] a substrate, resulting in a grown surface of the non-polar a-plane GaN template layers that is a non-polar plane; and

(b) growing one or more non-polar a-plane (Al,B,In,Ga)N layers directly off of [[a]] the grown surface of the non-polar a-plane GaN template layers to form at least one non-polar a-plane quantum well.

2. (CANCELED)

3. (CANCELED)

4. (CANCELED)

5. (CANCELED)

6. (ORIGINAL) The method of claim 1, wherein the substrate is a sapphire substrate.

7. (ORIGINAL) The method of claim 1, wherein the growing step (a) comprises:

(1) annealing the substrate;

(2) depositing a nitride-based nucleation layer on the substrate;

(3) growing the GaN layer on the nucleation layer; and

(4) cooling the GaN under a nitrogen overpressure.

8. (ORIGINAL) The method of claim 1, wherein the growing steps are performed by a method selected from a group comprising metalorganic chemical vapor deposition (MOCVD), molecular beam epitaxy (MBE), liquid phase epitaxy (LPE), hydride vapor phase epitaxy (HVPE), sublimation, and plasma-enhanced chemical vapor deposition (PECVD).

9. (ORIGINAL) A device manufactured using the method of claim 1.

10. (CURRENTLY AMENDED) A nitride semiconductor device comprising one or more non-polar a-plane gallium nitride (GaN) template layers grown on an r-plane substrate, and one or more non-polar a-plane quantum wells formed from one or more non-polar a-plane (Al,B,In,Ga)N layers grown off of a grown surface of the non-polar a-plane GaN template layers, wherein the nitride semiconductor device is created using a process comprising:

(a) growing one or more non-polar a-plane gallium nitride (GaN) template layers on [[an r-plane]] a substrate, resulting in a grown surface of the non-polar a-plane GaN template layers that is a non-polar plane; and

(b) growing one or more non-polar a-plane (Al,B,In,Ga)N layers off of [[a]] the grown surface of the non-polar a-plane GaN template layers to form at least one non-polar a-plane quantum well.

11. (CURRENTLY AMENDED) A nitride semiconductor device, comprising:

(a) one or more non-polar a-plane gallium nitride (GaN) template layers grown on [[an r-plane]] a substrate, resulting in a grown surface of the non-polar a-plane GaN template layers that is a non-polar plane; and

(b) one or more non-polar a-plane quantum wells formed from one or more non-polar a-plane (Al,B,In,Ga)N layers grown off of [[a]] the grown surface of the non-polar a-plane GaN template layers.

12. (PREVIOUSLY PRESENTED) The method of claim 1, wherein the quantum well ranges in width from approximately 20 Å to approximately 70 Å.

13. (PREVIOUSLY PRESENTED) The method of claim 1, wherein the quantum well has a doped barrier.

14. (PREVIOUSLY PRESENTED) The method of claim 13, wherein the doped barrier is doped with silicon.

15. (PREVIOUSLY PRESENTED) The method of claim 14, wherein the doped barrier is doped with silicon with a dopant concentration of 2×10^{18} cm^{-3}.

16. (PREVIOUSLY PRESENTED) The method of claim 1, wherein the quantum well is an GaN/AlGaN quantum well.

17. (NEW) The method of claim 1, wherein the non-polar a-plane quantum well ranges in width from more than 40 Å to approximately 70 Å in order to optimize emission intensity from the non-polar a-plane quantum well.

18. (NEW) The method of claim 2, wherein a maximum emission intensity from the non-polar a-plane quantum well is associated with a non-polar a-plane quantum well width of approximately 50 Å.

19. (NEW) The method of claim 3, wherein the non-polar a-plane quantum well has an optimal width of 52 Å.

20. (NEW) The method of claim 1, wherein the substrate is an r-plane substrate.

21. (NEW) The method of claim 1, wherein the quantum well width required for optimal non-polar quantum well emission is larger than for polar quantum wells.

22. (NEW) The method of claim 1, wherein a maximum emission intensity is associated with a thicker quantum well width for the non-polar a-plane quantum well as compared to a polar c-plane quantum well.

23. (NEW) The method of claim 1, wherein a quantum well width of the non-polar a-plane quantum well is thicker as compared to a quantum well width of a polar c-plane quantum well, for their respective emission intensities.

24. (NEW) The method of claim 1, wherein an optimal well width of the non-polar a-plane quantum well is determined primarily by material quality, interface roughness, and excitonic Bohr radius.